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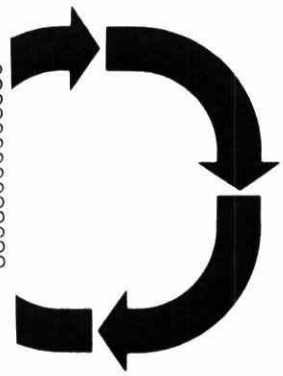

Resource Recovery

SUMMARY REPORT

FOR

THE REGIONAL MUNICIPALITY OF NIAGARA

SYSTEMS STUDY

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Ministry
of the
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Summary report for the
regional municipality of Niagara
: systems study.

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RESOURCE RECOVERY SYSTEMS STUDY

Introduction

In late 1974 the area municipalities and the Region, with the co-operation of the Ministry of the Environment, completed the first phase of a waste management program for the Region. This phase was summarized in the report entitled "Waste Management Study, January 1975", which was prepared by the consulting engineering firm of Proctor & Redfern Limited. This study evolved two master plans for consideration, but did not recommend a change in the present system of landfill disposal until conditions such as more favourable markets for recovered materials, government financial assistance to promote recycling and established technology prevail.

Resource Recovery Planning

In October, 1974, the Minister of the Environment announced 50% capital subsidies for front-end resource recovery plants as a means of stimulating the recovery of materials and energy from solid waste. The Ministry of the Environment agreed to underwrite the cost of a study in Niagara Region which would determine the feasibility and financial implications of a waste management system which utilized some form of material or energy recovery.

At about the same time a consortium known as "Enercycle" made up of Ontario Paper, Consumers Gas and Canadian Industries Limited announced plans to explore the feasibility of utilizing municipal waste to produce steam for use by Ontario Paper.

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Study Approach

In co-operation with the Region of Niagara and the area municipalities, terms of reference were prepared and the consulting firm of Albery, Pullerits, Dickson & Associates Ltd. was retained to carry out the study. A Technical Co-ordinating Committee, composed of two representatives from the staff of the Regional Public Works Department and two representatives from the Ministry of the Environment had the responsibility for directing the operation of the study.

In addition, a Technical Advisory Committee, composed of staff representatives from each of the area municipalities and the Region was formed to review the progress of the study and to assist in providing the technical input to the study team. A Policy Advisory Committee composed of elected representatives from each of the area municipalities and the Region met regularly to review progress of the study and to comment on the effects of various stages of the study on each of the municipalities.

Public meetings were held at Niagara Falls, St. Catharines, Welland and Grimsby to explain the study and to encourage public input in the decision making process. Although attendance at these meetings was not high, it was agreed that a second round of public meetings in some form would be held to outline study results and advise the public of future action with respect to resource recovery.

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Study Highlights

1. The possibility of implementing an integrated system involving Ontario Paper, Enercycle and the Ministry of the Environment requires further investigation before alternatives can be considered.

2. Composting of municipal refuse is not an economical solution to the waste management problem in the Region although it may have limited application in specific circumstances.

3. The recovery of ferrous metal and glass does not provide sufficient revenue to support a processing plant.

4. The recovery of energy from waste offers the greatest potential for utilizing the resources in waste.

5. The area municipalities through co-ordinated efforts should take positive steps which would assist in the implementation of resource recovery independently of an immediate decision to accept or reject a particular proposal.

6. A lead time of 3-5 years is necessary to implement a waste management system which incorporates resource recovery.

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Study Summary

The Study Team investigated the feasibility of three main alternative options for the long-term management of solid waste in the Regional Municipality of Niagara.

1) Resource Recovery facilities encompassing all twelve area municipalities.

2) Resource Recovery facilities encompassing the Municipalities of Niagara Falls, St. Catharines, Pelham, Thorold and Niagara-on-the-Lake.

3) Resource Recovery facilities encompassing the Municipalities of Pelham, St. Catharines and Thorold.

In addition, secondary alternatives were reviewed, which included composting, a number of small resource recovery plants and the delivery of processed waste to a consumer outside the boundary of Regional Niagara.

No studies took place on adopting landfill as a long-term solution for putrescible waste as it was felt that this alternative was adequately covered in the 1975 Waste Management Study. It would appear that the existing landfill sites should serve the Region for about five years, however, a similar period of time would also be required for the negotiations, design construction and initiation of an appropriate alternate system.

Markets for ferrous metals, aluminum, glass and energy were investigated and it was found that:

1) Ferrous metal can be readily marketed.

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2) A limited market exists for clean paper. No additional market exists at the present time for paper fibre.

3) While a good potential exists for glass, its separation mechanically is costly.

4) Recovery of aluminum is not viable at present.

5) The energy requirements in the Thorold area exceed the maximum energy that can be derived from all solid waste generated in the Region.

In view of the major energy requirements at Ontario Paper Company Limited, the feasibility of a central facility at this site received greater attention throughout the study.

Conclusions

The Study Team found the concept of a central facility located at the Ontario Paper Company site including the cost of haul to be feasible based on assumptions listed on Page 1.7 and provided the following can be achieved:

1) That a Refuse-Derived Fuel (RDF) could be marketed to the Ontario Paper Company at a competitive price indexed to the value of coal.

2) That a satisfactory long-term agreement for the sale of ferrous and RDF could be implemented.

3) That the quantity of solid waste reaching a Resource Recovery facility in 1981 will be 1600 tons per day on the basis of processing five days per week.

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Recommendations - Waste Management Study

The following recommendations are not at this point in time dependent upon a Resource Recovery facility being available. We recommend that:

1) In conjunction with the Area Municipalities the Regional Municipality of Niagara designate the location of future non-putrescible sites and a central putrescible site on the Official Plan.

2) A charge be made for the use of a non-putrescible site. The charge should reflect the operating, supervision, depreciation and reserve costs as well as the flexibility for use by any municipality.

3) Consideration be given to implementing a standardized accounting system for collection and disposal.

4) A simple or sophisticated system be set up for recording solid waste quantities. It is suggested that weighing is a logical procedure for sites receiving large quantities of waste. Photographic, electric or air pressure methods could be adopted at the smaller sites.

5) The Area Municipalities in co-operation with the Regional Municipality of Niagara develop a program for separating the portion of non-putrescible waste which could be considered suitable for resource recovery.

6) The existing program of market development being undertaken by the Ministry of the Environment be further publicized. In this connection, it is suggested that a voluntary sub-committee representing industry, the Area Municipalities, the Region and the Ministry be formulated.

7) Consideration be given to the appointment of a full-time manager directly responsible to a policy forming group. The manager's responsibilities will include the implementation of a long range plan taking into account economic consideration and the accepted need for the recovery of resources.

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Recommendations - Resource Recovery

The Study Team has concluded that the greatest potential for the disposal of solid waste within Regional Niagara rests with the possibility of conversion to energy for use by the Ontario Paper Company in addition to recovery of ferrous metals from the waste stream.

> It is recommended therefore that the possibility of implementing an integrated scheme involving the Ministry of the Environment, the Ontario Paper Company and the Enercycle consortium be thoroughly investigated prior to considering any major alternative.
>
> As considerable lead time is necessary, it is suggested that a period of twelve months be allocated for implementing an agreement covering this overall concept.

Discussion

In comparing existing costs with those projected within the report for alternative waste management plans, it is necessary to take into account the following:

a) St. Catharines will shortly place into operation the new Glenridge site.

b) Thorold does not accept non-putrescible waste at their present site.

c) Fort Erie intends to re-open the old dump site and to charge for its use.

d) Several municipalities have or will be re-negotiating disposal contracts.

The sensitivity, therefore, of the figures contained within the report can have an individual or cumulative effect

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on the economic analysis. The sensitivity of the major factors within the report, such as population, fuel costs and interest rates are referred to in Section 7 and by far the most critical is the assumption that a Refuse-Derived Fuel can be marketed and indexed at a price 10% below the current value of coal. The final price, however, will be a negotiated figure and the agreement could be worded to allow for escalation and changing conditions.

When adopting a figure of 5.5 lbs./capita/day, the Study Team recognized the fact that the separation of the portion of non-putrescible waste suitable for resource recovery could not be implemented overnight. An element of time will be required to allow for a gradual change-over in methods and procedures. In addition, considerable study will be required before arriving at a fair and equitable rate structure covering the delivery of a suitable portion of non-putrescible waste to the facility.

Consideration was given to alternative methods for the implementation of an overall waste management system, which would fit within the Provincial guidelines with respect to Resource Recovery facilities.

The Study Team felt that the controlling body could be made up of all or a number of Area Municipalities, the Regional Municipality of Niagara or a combination of these groups with the Ministry of the Environment. To permit adequate future planning, market research and overall guiding control, steps

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should be taken immediately to appoint a full-time manager whose sole responsibility would be solid waste management.

The public participation portion of this study carried out by F. F. Slaney Limited indicated a desire for source separation and the availability of facilities for recycling. Additional important input from the public related to the proposed future location of landfill sites; air and ground water pollution from disposal facilities and use of the composting process.

The overall waste management plan suggested allows for citizen involvement in the form of encouraging local depots and provides for citizen delivery at a Resource Recovery facility.

Environmental aspects of landfill sites and Resource Recovery facilities will be subject to an in-depth review at the time of implementation of the overall waste management plan.

In the judgment of the Study Team considerable opposition may be expected in any one of the Area Municipalities to locating a new site for putrescible waste, even if this is found to be the cheapest solution. The inference from the people that attended the public participation program was that the majority would be prepared to expend additional funds on waste disposal provided it was for a program involving resource recovery.

Composting has been reviewed and may have merit in the Grimsby area and possibly Niagara-on-the-Lake provided the additional cost can be offset by revenue. Citizen involvement in backyard composting should be encouraged.

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The Study Team was not involved in the location of future sites for non-putrescible waste but it was felt that the Authority having jurisdiction should plan for these sites in convenient locations in each Area Municipality or in one or two cases, a joint site serving two municipalities. Whilst it is not mandatory, it makes sound economic sense to operate these sites on a user basis, the fee being set to cover total operating and supervisory costs as well as an allowance for depreciation and reserve.

Finally, the Study Team looked into alternative systems covering the generation of steam and synthetic gas from solid waste. Much greater in-depth work will be a pre-requisite to proceeding along any one of these alternative directions.

What Happens Now?

Since resource recovery systems require large capital investments the decision making process is often perceived to be slow and cumbersome especially by interested groups who sincerely believe that immediate action is necessary. It is unfair to criticize elected municipal and provincial officials because they choose to take a second look at expenditures of this magnitude in order to make certain that money is being spent wisely.

The consultant's report has been reviewed by the Policy Advisory Committee and forwarded to Regional Council for distribution to the Area Municipalities for their review and comments. In addition, the Policy Advisory Committee has recommended to Regional Council the formation of a joint committee with repre-

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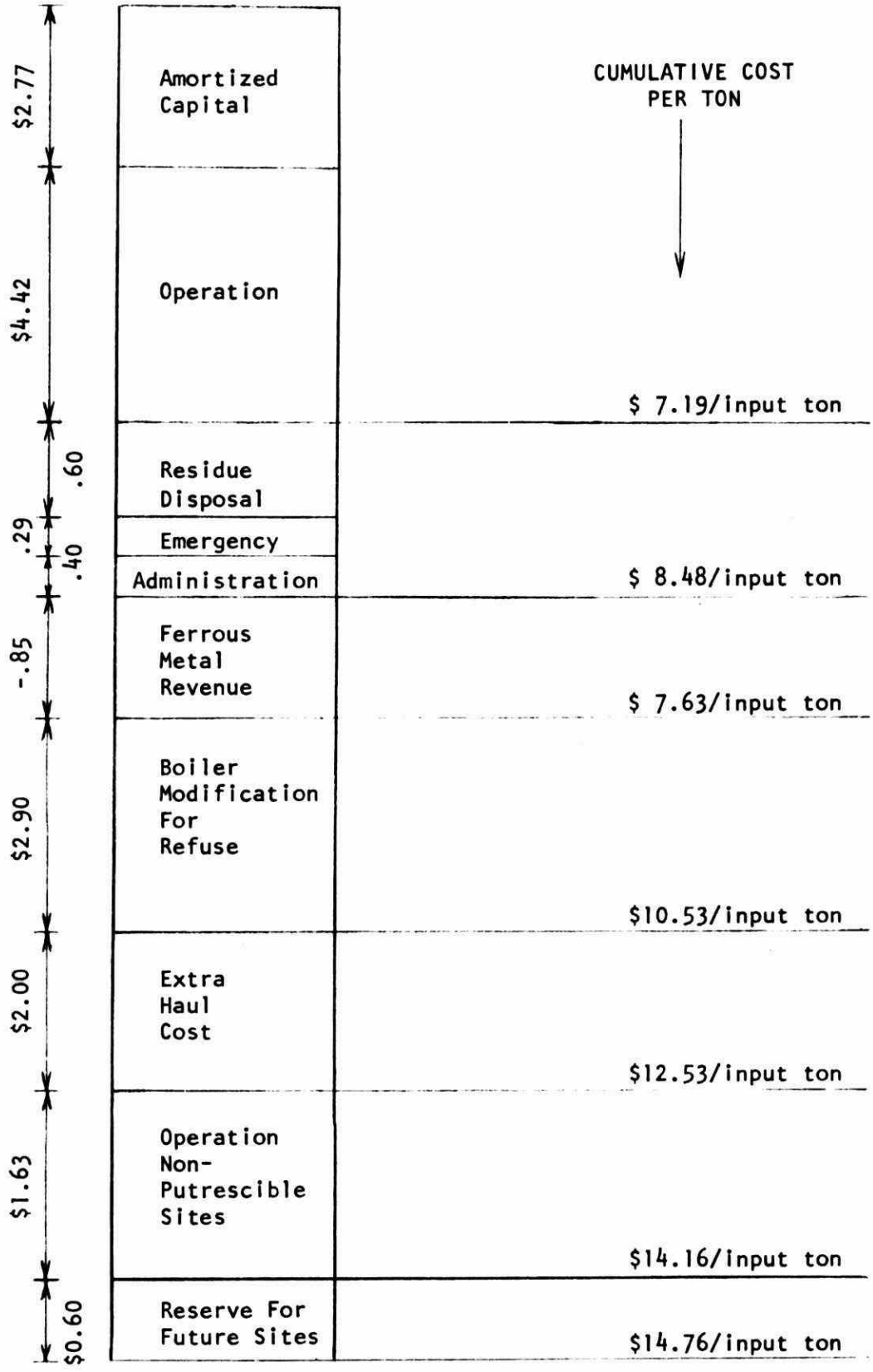
sentation from each of the Area Municipalities and the Region of Niagara, in order to make certain that the review of resource recovery technology and its application to the Region's waste disposal problems becomes an ongoing and continuing process. This is a very significant first step and should be recognized as a milestone in the efforts to make resource recovery a reality in the Region of Niagara.

ESTIMATED COSTS PER INPUT TON - 1981

All Figures Represent
1976 Prices & Revenue

TABLE S.1



All municipalities participating -
1600 tons/5 day processing week.

TABLE S.2

ESTIMATED COSTS WITH AND WITHOUT
REVENUE FROM REFUSE-DERIVED FUEL

	NO REVENUE FROM RDF		REVENUE FROM RDF	
YEAR	1981		1981	
	T/D*	$/INPUT TON	T/D*	$/INPUT TON
12 Municipalities	1600	14.76	1600	3.73
5 Municipalities	1000	17.47	1000	6.44
3 Municipalities	650	17.90	650	6.87

* Processing 5 days per week.

The preceding figures have been presented for comparative purposes and allow for the following:

a) Capital and operating costs in processing the waste to obtain ferrous metal recovery and a Refuse-Derived Fuel. (Including the 50% Provincial Subsidy on capital costs.)

b) An allowance of $250,000 per year for the purchase of area non-putrescible sites and a central putrescible site.

c) Operation of a non-putrescible site in each Area Municipality.

d) Additional or reduced haul costs for each Area Municipality in delivering solid waste to the central facility on the basis of 5.5 lbs. per capita per day.

e) The transportation and disposal costs of residue within seven miles.

f) The operation of emergency facilities for a period of one month in the event of accumulative breakdown.

g) An administrative cost of $166,000 per year.

h) A capital allowance of $7,400,000 for boiler modification to accommmodate a Refuse-Derived Fuel.